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which is surrounded by as many zonary placentæ as there are fœtuses, the placentæ not, however, forming perfect zones. He finds the ungual phalanges at this period to differ entirely from that of the adult. Instead of being long and claw-shaped, they are wide and hoof-shaped, with a trilobate margin, as in the extinct genus *Gyptodon*. This is highly interesting as exhibiting the law of acceleration modifying that of heredity. The sexual characters are probably like those of the hyænas, in that the female fœtus has a clitoris so large as to give her a close resemblance to the male.—*E. D. Cope*.

### PSYCHOLOGY.

GAMBETTA'S BRAIN.—The *Revue* recently (November 21st, 1885) gave the weight of Gambetta's brain, according to M. A. Bloch. This weight, which was remarkably light (1160 grammes), evidently ought to be considered as an entirely secondary element in a proper estimate of the diverse qualities of the organ. At a recent session of the Society of Anthropology (March 18) Professor Mathias Duval communicated a very interesting report in which he brought out and gave their due value to certain structural details of this brain—to certain characteristic elements which must be regarded as far outweighing the simple consideration of the gross weight of the organ. Compared with the brains of individuals known to have been possessed of but little intelligence, and representing types of reduction of the third frontal convolution, the brain of Gambetta, besides other peculiarities, shows a type of extreme development of that convolution. This development is such that not only are the secondary convolutions more numerous and more complicated than those of ordinary brains, but, besides this, the "cape" is double.

This development is evidently in favor of the localization discovered by Broca, who held that the third frontal convolution was the seat of speech. M. Mathias Duval has also pointed out the two following peculiarities, the significance of which he has not been able to determine.

(1) The right quadrilateral lobule is very complicated, and is divided into two parts by a sulcus which starts from the occipital fissure. The lower of these two parts is subdivided into many secondary convolutions by the presence of a fissure with numerous branches arranged in star-like patterns.

(2) The occipital lobe is notably reduced, especially upon the right side.

M. Mathias Duval thinks therefore that Gambetta's brain should be considered refined (*beau*)—although the expression does not appear to him scientific—in the sense that it preserves, especially in the frontal region, in spite of the complication of its folds, a regularity which may be called schematic.—*Revue Scientifique*, April 3d, 1886, p. 444.

MEMORY IN THE HUMBLE BEE.—The author removed a nest containing numerous individuals of one of the common humble bees (*Bombus terrestris*) from its original location, and carried it to his residence, about three miles distant. He further carefully watched the place for some time after having captured all those that had flown to the defence of their nest, and secured, it was believed, the entire colony. These he imprisoned for several hours in a wide-mouthed bottle, and safely reunited them in their new home. At his house he placed the nest, with its inhabitants, near a window, and after they had become quieted, made a small entrance. Immediately they began to fly out, and in doing so must have observed their surroundings, for in a short time they one by one returned. The following night, however, there was a severe storm, and while the inhabitants of the forty other colonies near it, that had not become accustomed to their surroundings, were not in the least troubled, these bees escaped, and hid themselves somewhere without during the storm. Upon searching for them early the next morning, the queen was found dead upon the ground, while fifty or sixty of the workers were seen flying about the house. From time to time one or another—probably those which had flown out of the entrance the day before—found the opening and returned into their nest, while the remainder after flying about for several hours gradually disappeared, till not one was left. As it was supposed that they had in all probability returned to their previous nest, the place was visited in the afternoon, where, sure enough, at least fifty individuals were found. They had thus, it will be seen, distinctly remembered it, and after they had sought in vain to find entrance to their new home, they had depended upon their wonderful sense of locality, and returned thither.

A similar instance was observed with another nest, which had been removed a distance of nearly five miles, and in which the same care had been exercised to capture all the individuals. In unskillfully handling the box containing the nest and bees, in its new location, about thirty of the workers escaped, and flew through the open window. After flying for a long time about the house, as though in search of their comrades, they likewise disappeared and returned to their original nest, and again established themselves, as was afterwards ascertained.

It was frequently observed that, when nests have been removed but a short distance, the workers during the first few days after their change, would fly swiftly in the direction of their old nest, when, discovering their mistake, they would change their course, and go to their new home. It seemed evident that these little creatures, through some mental process or other, thus discovered their changed circumstances.

In order to test further this remarkable sense of locality, the author marked a number of individuals with oil colors, and carried

them, enclosed in wooden cases, a distance of eight or nine miles, when he allowed them to escape. Very many of them, though not all, found their way back to their nests, and as a rule reached home sooner than the author did himself.

The author noticed that at his summer residence, where he had kept numerous hives of these bees, the following spring many individuals appeared, and seemed to be searching for their previous nests; but he was unable to determine whether they were individuals of the previous broods or not. Towards the close of July, 1884, he obtained three nests of *Bombus mastrucatus*, a large species only found in the mountains, and especially the higher regions, and carried them to his residence in the city, where he placed them in a window of the second story. The house was enclosed by high buildings, with no garden attached, and yet they returned readily and directly from their excursions to their nests.

They thrive, and by the first of October had increased to considerable numbers. By the middle of October they wholly disappeared; but in the early part of the following April, individuals of this species were observed flying about the window, and as soon as they found an entrance, sought the remains of their old nests, and took up their abode. They remained for a while, when their nest was accidentally injured, and they left. Nothing more was seen of them till after the author's return from his summer vacation, in the middle of September, when a single female of this species made its appearance. In their inability to obtain an entrance through the closed window, they had evidently built a new nest in the vicinity, and reared their broods.

These circumstances indicate that the intellectual powers of the humble bee are not as slight as we have been accustomed to believe. Here in this case, from October to April—a period of six months—had these bees remained dormant in the ground, or hidden in some crevice, and, upon regaining their activity, had not only remembered the place where they were, but had sought and found, despite the many difficulties, their last year's nest. That these individuals were from last year's brood, there was no doubt, as throughout the province the species nowhere else occurs, peculiar as it is to elevated and mountainous regions.

The foregoing is from *Science*, April 9th, 1886 (translated from *Kosmos*), but we do not agree with the statement that the brain of the bee is simple; on the contrary it is only less complex than that of a fish.

THE VISION OF BIRDS.—I have been exceedingly interested, while watching the wrens, robins, and blue-birds at the time they are rearing their young broods, to note the celerity of their movements and the evident acuteness of their vision. They are able to see an insect much further than a person can distinguish one, and fly as straight as an arrow to the minute object when it is from fifteen to thirty feet distant. They seem to make no mistakes, but always

to secure the coveted prey. I have often seen these birds dart down *into the grass* from those heights and seize an insect with such precision that it must have been plainly visible from where the start was made. This would indicate that they possess a faculty of sight, developed by ages of practice, altogether above that of the human race, and most useful in their struggle for existence. But the late Robert Kennicott (quoted by Baird, Brewer and Ridgway in their great work on the Birds of North America) states that a pair of wrens will capture 1000 insects per day during the breeding season, and this fact of itself would indicate the sharpest vision and wonderful celerity of movement.—*Charles Aldrich, Webster City, Iowa, June 1st, 1886.*

#### ANTHROPOLOGY.<sup>1</sup>

THE DAVENPORT ACADEMY has just issued Vol. IV of its Proceedings, nearly the whole of which is occupied with anthropology. The papers of Dr. Hoffman and Mr. Holmes have been some months in print and have been previously noticed. An appendix of nearly one hundred pages is by the president of the academy, and entitled "Elephant pipes and inscribed tablets in the museum of the Academy of Natural Sciences, Davenport, Iowa." The contents of this appendix may be tabulated as follows:

1. A defence of the separate nationality of the Mound-builders against the theory of their identity with modern Indians.
2. A defence of the genuineness of the three inscribed tablets and two elephant pipes in the museum of the Academy, especially against the statements of Mr. Henshaw in his paper published in the second annual report of the Bureau of Ethnology and the endorsement of the director of the bureau.
3. An argument against centralization of ethnological work in the Smithsonian Institution and the Bureau of Ethnology.
4. A series of letters from friends of the Davenport Academy in sympathy with a former vindication.
5. Extracts from scientific journals in relation to the same subject.

Whether the Mound-builders were succeeded in the Mississippi valley by their immediate descendants, the Indians living there when the whites made their appearance three centuries and more ago, is an open question, though some archæologists have declared the argument closed. Dr. Carr, Dr. Brinton, the director and the archæologist of the Bureau of Ethnology, and many others are in favor of the identity. Squier and Davis, President Putnam and many other eminent archæologists hold the contrary view, maintaining that the Mound-builders exhibited traits of civilization which set them far above their modern successors on the same soil. The appendix to the Davenport Proceedings is an able summary of the arguments in favor of the higher civilization of the Mound-builders. It seems to us that a comprehensive review of what can be said for and against this theory by some judicial mind would be exceedingly timely.

<sup>1</sup> Edited by Prof. OTIS T. MASON, National Museum, Washington, D. C.